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D.P.U. 94-167

Investigation by the Department of Public Utilities of Middleborough Gas & Electric Department's Long Range Gas Forecast for 1993-1994 through 1997-1998, filed pursuant to G.L. c. 164 §§ 69I et seq. and 980 C.M.R. 7.00 et seq.

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I. INTRODUCTION AND PROCEDURAL HISTORY

On September 2, 1994, pursuant to G.L. c. 164, § 69I, Middleborough Gas and Electric Department ("Middleborough" or "Company") filed with the Department of Public Utilities ("Department") a petition for approval of its long range gas forecast and supply plan for the split years¹ 1993-1994 through 1997-1998. The petition was docketed as D.P.U. 94-167. Middleborough is a municipal gas and electric utility distributing natural gas and electricity within the Town of Middleborough. The Company serves approximately 2,875 customers of which 12 are industrial, 36 are municipal, 363 are commercial and the remainder are residential.

Pursuant to notice duly issued, a hearing was held at the Department's offices on March 16, 1995. No petitions to intervene were filed. Middleborough sponsored the testimony of three witnesses: John W. Dunfey, general manager; James L. Collins, energy analyst; and Sandra A. Cataldo, communications/marketing specialist. The evidentiary record includes 22 exhibits and four responses to record requests.

II. ANALYSIS OF THE LONG RANGE FORECAST

A. Standard of Review

The Department is directed by G.L. c. 164, § 69I to review the long range forecast of each gas utility to ensure that the forecast accurately projects the gas service requirements of

¹ The Energy Facilities Siting Council has defined the split year as November 1 through October 31. The heating season is defined as November 1 through March 31, and the non-heating season is defined as April 1 through October 31. Energy Facilities Siting Council, Administrative Bulletin 86-1, at 5.

the utility's market area. The Department's regulations require that the forecast reflect accurate and complete historical data, and reasonable statistical projection methods. See 980 C.M.R. § 7.02 (9)(b). A forecast that is based on accurate and complete historical data, as well as reasonable statistical projection methods, should provide a sound basis for resource planning decisions. Colonial Gas Company, D.P.U. 93-13, at 2 (1995); Boston Gas Company, 25 DOMSC 116, 127 (1992) ("1992 Boston Gas Decision"); Berkshire Gas Company, 16 DOMSC 53, 56 (1987) ("1987 Berkshire Decision").

In its review of a forecast, the Department determines if a projection method is reasonable based on whether the methodology is: (a) reviewable, that is, contains enough information to allow a full understanding of the forecast methodology; (b) appropriate, that is, technically suitable to the size and nature of the particular gas company; and (c) reliable, that is, provides a measure of confidence that the gas company's assumptions, judgments, and data will forecast what is most likely to occur. D.P.U. 93-13, at 2; 1992 Boston Gas Decision at 127; 1987 Berkshire Decision at 55-56.

B. Previous Sendout Forecast Review

In Middleborough Gas Department, 10 DOMSC 119 (1983) ("1983 Middleborough Decision") the Energy Facilities Siting Council ("EFSC" or "Siting Council")² approved Middleborough's sendout forecast, subject to several conditions. Those conditions required

² Pursuant to Chapter 141 of the Acts of 1992 ("Reorganization Act"), the Siting Council was merged with the Department of Public Utilities ("Department", or "DPU") effective September 1, 1992. Reorganization Act, § 55. As a result of the merger, the DPU was given jurisdiction to review utility forecast and supply plans, a function previously granted to the Siting Council. G.L. c. 164, § 69I.

Middleborough to:

- (1) obtain accurate sendout data in the future;
- (2) continue to develop its conservation programs and, in addition, seek ways in which it might increase participation of its residential customers in Mass Save or provide its customers with an alternative; and
- (3) incorporate its conservation judgments into its forecast preparations.

1983 Middleborough Decision at 121, 123. Middleborough's compliance with these conditions is described below, respectively, in Section II.D.1.b., Section III.C.2., and Section III.D.1.b.

C. Planning Standards

The first element of the Department's forecast review is an assessment of a company's planning standards in order to determine if they are reviewable, appropriate and reliable. A company's planning standards are used as a basis for projecting its sendout forecast which, in turn, is used for ascertaining the adequacy and cost of a company's supply plan.

The Department's review of planning standards begins first with a review of a company's weather data. The second step of the Department's review is an analysis of the planning standards themselves, i.e., how the company arrived at its (1) normal year, (2) design year, and (3) design day standards.

1. Weather Data

a. Description

Middleborough stated that its weather data were provided by Weather Services

Corporation ("WSC") of Bedford, Massachusetts, and that WSC provides degree day³ data for Middleborough based on data for two neighboring cities, Brockton and Taunton (Exh. MGED-1, at 1). WSC provided the Company with weather data encompassing the past 25 years (Tr. at 10). Middleborough stated that there is no weather station in Middleborough, and that the Company is not making any effort to develop its own weather data (i.d. at 8, 11). The Company stated that because Middleborough is in proximity to Brockton and Taunton and about the same distance from the coast as those two cities, the use of the Brockton and Taunton data is appropriate (i.d. at 8).

b. Analysis

The Department finds that the use of WSC weather data is likely the most reliable information upon which Middleborough can depend for input into its planning standards, because of the proximity of the Brockton/Taunton area. In addition, the twenty-five year database from WSC is comparable to other databases approved by the Department. 1992 Boston Gas Decision at 135-136; 1991 Colonial Gas Company, 23 DOMSC 351, 363-364 (1991) ("1991 Colonial Gas Decision"). Therefore, the Department finds that the WSC weather data provides an adequate database from which to develop Middleborough's planning standards and that Middleborough's weather data are reviewable, appropriate and reliable.

³ A degree day is a measure of coldness of the weather experienced, based on the extent to which the daily mean temperature falls below a reference temperature, usually 65 degrees Fahrenheit.

2. Normal Year Standard

a. Descripti on

Mi ddl eborough used a normal year standard of 6,849 degree days to devel op i ts sendout forecast (Exh. MGED-1, Sch. A). The normal year standard was based on an ari thmeti c average of degree days over the previ ous fi fteen year peri od from data provi ded by WSC (Exh. MGED-1, at 1).

b. Analysi s

The use of an ari thmeti c average of hi stori cal degree day data to establi sh a normal year standard has been accepted previ ously by the Department. D.P.U. 93-13, at 10; 1992 Boston Gas Deci si on at 136; 1991 Coloni al Gas Deci si on at 363-364. Because Mi ddl eborough based i ts normal year standard on a hi stori cal average of the WSC data and based i ts planni ng standards on an up-to-date weather data base, the Department fi nds that Mi ddl eborough's methodology for determi ni ng i ts normal year standard i s revi ewable, appropri ate, and reli able.

3. Desi gn Year Standard

a. Descripti on

Mi ddl eborough stated that i ts desi gnyear standard i s based on the hi ghest degree day peri od i n the past 25 years (Exh. MGED-1, at 1). Mi ddl eborough deri ved i ts desi gnyear by total li ng the monthly degree days for the cal endar year 1989 (Exh. MGED-1, Sch. A). Mi ddl eborough's desi gnyear standards based on thi s data are: 7,332 degree days for the desi gnyear, and 5,639 degree days for a fi ve-month desi gnwi nter (i d.). Mi ddl eborough di d

not perform any studies to determine the probability of occurrence of its design year, but stated that the design conditions have occurred only twice in the past 25 years (Id. at 11).

b. Analysis

In its previous order, the Siting Council recommended that Middletown "utilize the coldest split year actually experienced" to develop its design year standard in order to bring the Company in line with the majority of gas utilities then filing forecasts with the Council. 1983 Middletown Decision at 121. Further, the Siting Council's instructions for gas company forecasts and supply plans direct gas utilities to base their seasonal historical sendout on the basis of the split year defined as November 1 through October 31. Energy Facilities Siting Council Administrative Bulletin 86-1, at 5. Because Middletown used a calendar year rather than a split year to derive its design year, the Department finds that the Company has not fully addressed the Siting Council's previous concern with regard to the selection of its design year.

In its 1986 Gas Generic Order, 14 DOMSC 95, at 97 (1986), the Siting Council notified gas companies that renewed emphasis would be placed on design criteria "to ensure that those criteria bear a reasonable relationship to design conditions that are likely to be encountered". The Siting Council ordered each company, in each forecast filing, to include a detailed discussion of how and why it selected the design weather criteria that it uses, giving particular attention to the frequency with which design conditions are expected to occur, and to the effect of the design standard on the reliability of the company's forecast and the cost of its supply plan. Id. at 96-97, 104-105. The Department finds that

Middleborough did not perform any studies to determine the frequency of occurrence of its design year. Therefore, the Department finds that Middleborough's methodology for determining design year standards is reviewable, but only minimally appropriate and minimally reliable.

Consequently, in order for the Department to approve Middleborough's next forecast and supply plan, Middleborough must develop design year standards based on an analysis of the frequency of occurrence of various possible design standards, and of the costs of maintaining supplies to meet the weather represented by these standards. The Company must also base its design year standard on data from its coldest actual split year for future Department approval.

4. Design Day Standard

a. Description

Middleborough stated that it currently uses December 25, 1980, determined by WSC to be the coldest degree-day recorded in the past 25 years in the Brockton/Taunton area, in order to obtain a design degree day of 77 (Exh. MGED-1, at 1; Tr. at 9). Middleborough stated that it did not perform an analysis to determine the probability of occurrence of this design day (Tr. at 11). The Company based the probability of occurrence of a design day of 77 on the fact that the design day has occurred twice in the last 25 years (i.d.). Additionally, Middleborough did not perform an economic analysis to determine the appropriate design day standard, relying on the weather standard alone (i.d.).

b. Analysis

Middleborough's design day standard, like its design year standard, reflects the coldest weather recorded in its historical weather database. Because Middleborough did not develop its design day standard considering the probability of occurrence of design weather or the associated costs of maintaining gas supplies required to meet such weather, the Department finds that the Company's design day standard is reviewable, but only minimally reliable and minimally appropriate.

Consequently, in order for the Department to approve Middleborough's next forecast and supply plan, Middleborough must develop design day standards based on an analysis of the probability of occurrence of various possible design standards and of the costs of maintaining supplies to meet the weather represented by these standards.

5. Conclusions on Planning Standards

The Department has found that: (1) the Company has a reviewable, appropriate and reliable weather database for use in the development of its planning standards; (2) the Company has a reviewable, appropriate, and reliable normal year standard; (3) the Company has a reviewable, minimally appropriate, and minimally reliable design year standard; and (4) the Company has a reviewable, minimally appropriate, and minimally reliable design day standard. Accordingly, the Department finds that the Middleborough's planning standards are reviewable, but only minimally appropriate and minimally reliable.

D. Forecasting Methods

1. American Gas Association Model

a. Description

In developing its forecast of customer requirements, Middleborough follows the forecast methodology developed by the American Gas Association ("AGA") for small gas companies.⁴ The Department has approved the use of this methodology in a previous forecast and supply plan. Holyoke Gas and Electric Light Department, 13 DOMSC 47, 57 (1985) ("1985 Holyoke Decision").

Middleborough provided the Department with a step-by-step description of its forecasting method, as delineated below (Exh. MGED-1, § 11). This method is based on historical relationships and trends in customer growth and sendout. Middleborough forecasts its sendout by customer class, heating and nonheating season, and normal and design year conditions (i.d.)

To forecast sendout to non-heating customers for the residential, municipal, and commercial classes, Middleborough: (1) calculates by class the average annual use per customer for the previous year; (2) adjusts the average annual use downward by one percent to account for conservation; (3) forecasts the number of customers for each year of the forecast; (4) calculates the annual sendout for the class by multiplying the forecasted number of customers by the use per customer; and (5) splits the annual sendout proportionally to the

⁴ "A Simplified Approach to Forecast Gas Sales and Revenues For the Small Gas Distribution Company," American Gas Association, 1983.

heating and nonheating seasons based on the length of each season (i d.).

To forecast sendout to heating customers for the residential, municipal, commercial, and industrial classes for the heating season, nonheating season and design heating season, Middleborough normalizes its customer use by: (1) calculating the class average use per customer; (2) calculating the class heating and nonheating use per customer; (3) weather normalizing the class heating use; and (4) calculating the class normalized total use per customer (i d.).

Middleborough then calculates its sendout by class for the heating season, nonheating season, and design heating season by: (1) forecasting the number of heating customers for each year of the forecast; (2) adjusting the normalized use per customer downward by one percent to account for conservation; (3) calculating the sendout for the class by multiplying the forecasted number of heating customers by the normalized use per customer; and (4) splitting the annual sendout between the heating and nonheating seasons (i d.).

b. Analysis

As noted, the Department previously has approved the use of the AGA forecasting methodology. The Department notes, however, that in light of industry changes brought about by FERC Order 636, this simplified, trending approach to forecasting sendout requirements may not be sufficient in the future. Relying upon trending methodology and historical relationships during periods of change may result in forecasting errors which could lead to insufficient gas supply or costly oversupply. Further, improved statistical and forecasting tools, which provide for more sophisticated data analysis, have become readily

available to companies the size of Middelborough through the use of personal computers. Therefore, the Department finds that Middelborough's methodology is only minimally appropriate for a company of its size and resources. Consequently, the Department finds that Middelborough's use of this methodology is reviewable, but only minimally appropriate and minimally reliable. In order for the Department to approve Middelborough's next forecast and supply plan, the Company must justify continued use of trending and its current methodology or propose an alternative forecasting methodology.

In response to the Siting Council's previous order requiring Middelborough to obtain accurate sendout data in the future (1983 Middelborough Decision at 121), the Company has developed its forecast based on historical sendout data by looking at customer class, heating and nonheating customers, and heating and nonheating seasons. Middelborough's use of historical, disaggregated sendout data to develop its sendout forecast is an improvement over the analysis presented in its previous forecast and supply plan and directly addresses the Siting Council's concern. Therefore the Department finds that Middelborough has satisfied condition one of the 1983 Middelborough Decision.

In response to the Siting Council's previous order requiring Middelborough to incorporate conservation impacts into its sendout forecasting process (1983 Middelborough Decision at 123), the Company stated that a conservation adjustment of one percent is now applied for all classes of customers (Exh. MGED-1 at 1). Middelborough arrived at the one percent figure after consultation with other small gas companies in Massachusetts (Exh. MGED-7). Middelborough has not performed an analysis of whether this one percent

adjustment is an accurate representation of actual conservation activity (Tr. at 12). The Department finds that the use of a conservation factor in adjusting sendout downward to account for the effects of Middletown's DSM programs and for naturally occurring conservation is an improvement to the Company's forecasting methodology and is useful in accounting for conservation effects. Therefore, the Department finds that Middletown has satisfied condition three of the 1983 Middletown Decision.

However, while the Department recognizes that it may not be appropriate for Middletown to fund an extensive study of true conservation effects, it is within the Company's means to make a comparison of normalized use per customer over the years for which these data are available. Therefore, in order for the Department to approve Middletown's forecast methodology in its next forecast and supply planning, the Company must perform an analysis of normalized use per customer over the years for which the data are available and must discuss the appropriateness of any conservation adjustment that is made.

2. Residential Forecast

a. Description

For the split year 1992-1993, Middletown's average numbers of residential heating and non-heating customers were 1,633 and 803, respectively (DPU-RR-1). Middletown's sendout to the heating and non-heating residential classes was 150.1 and 25.9 MMcf, representing 36.4 and 6.3 percent, respectively, of the Company's sendout for the same period (Exh. MGED-1, § 11).

Middleborough estimated that 65 new residential heating customers would be added each year of the forecast period, based on the performance of the past five years (Exhs. MGED-1, at 1; MGED-5). Middleborough calculated this figure by extrapolating the four percent annual customer growth in the residential heating class that occurred over the previous five years (Exh. MGED-5). Middleborough stated that some of this heating customer growth came from conversions from non-heating customers, but Middleborough noted that non-heating sales did not decrease (Exh. MGED-6). Middleborough, therefore, did not project reduced numbers of residential non-heating customers (id.). Middleborough's records show the actual number of non-heating customers declining at an average annual rate of 1.9 percent over the previous five year period (RR-DPU-2).

Based on Middleborough's forecast, residential heating class sendout would increase annually at an average rate of 2.6 percent (Exh. MGED-1, § 11). This increase incorporates the four percent increase in customers and the one percent conservation adjustment (Exh. MGED-1, at 1; RR-DPU-2). Residential nonheating class sendout declines at a rate of one percent per year due to the conservation adjustment (Exh. MGED-1, § 11).

b. Analysis

In previous decisions, the Siting Council has accepted trending as an appropriate method of forecasting customer growth and sendout for small and medium-sized companies. 1990 Berkshire Gas Company, 19 DOMSC 247, at 274, 276; 1987 Wakefield Municipal Light Department, 16 DOMSC 149, at 153-155. For the residential heating customer class, Middleborough's trending approach may provide a reasonable basis for predicting future

activity; however, the concerns expressed regarding trending in Section II.D.1.b. apply here as well. Furthermore, Middelborough's method for forecasting residential non-heating class sales has no basis because the number of residential non-heating customers is declining, and Middelborough has not taken this into account in its forecast.

Therefore, for the Department to approve Middelborough's residential forecast in its next forecast and supply plan, the Company must forecast the number of non-heating class customers as well as heating class customers. While the decline in the number of such customers apparently has not affected actual sendout significantly over the past five years, there may be a cumulative effect over time, and the Company should use accurate data and maintain forecast integrity in the future. As there are statistical variations within any forecasting model, the Department will be better able to judge the limits of Middelborough's forecast if the Company uses accurate input data.

For the purposes of the instant case, the effect of this calculation method on the forecast is minor. Accordingly, the Department finds Middelborough's forecast of residential sendout to be reviewable, but only minimally appropriate and minimally reliable.

3. Commercial Forecast

a. Description

For the 1992-1993 split year, Middelborough's average numbers of heating and non-heating commercial customers were 293 and 70, respectively (DPU-RR-3). Middelborough's sendout to the heating and non-heating commercial classes was 133.1 and 15.4 MMCF, representing 32.4 and 3.7 percent, respectively, of the Company's sendout for the same

period (Exh. MGED-1, § 11).

Middleborough estimated that 18 new commercial heating customers would be added each year of the forecast period (Exh. MGED-1, at 1). This projection was based on an assumption that the seven percent growth rate in this customer class over the past five years would continue over the five-year forecasting horizon (Exh. MGED-5). Middleborough assumed that commercial non-heating customer totals would remain the same over the five-year planning horizon, because non-heating sales have not decreased over the past five years (Exh. MGED-6). However, as with the residential non-heating forecast, the number of non-heating commercial customers has declined steadily over the past five years (DPU-RR-3).

Based on this methodology and the one percent conservation adjustment, Middleborough forecasted average annual growth in sendout of 4.3 percent for commercial heating customers and a one percent annual decline in sendout for commercial non-heating customers (Exh. MGED-1, § 11).

b. Analysis

As stated in Section II.D.2.b. above, the Siting Council has previously accepted trending as an appropriate approach for forecasting customer growth and sendout. For the commercial customer classes, Middleborough's five year trending approach may provide a reasonable basis for predicting future activity, but the Department's concerns regarding trending apply here as well.

Furthermore, Middleborough's method for forecasting commercial nonheating class sales has no basis; the number of commercial nonheating customers is declining, and

Middletown has not taken this into account in its forecast. For the Department to approve Middletown's commercial forecast in its next forecast and supply plan, the Company must forecast the number of commercial non-heating class customers as well as heating class customers. Therefore, the Department finds that Middletown's commercial forecasting methodology is reviewable, but only minimally appropriate and minimally reliable.

4. Municipal Forecast

a. Description

For the 1992-1993 split year, Middletown's average numbers of municipal heating and non-heating customers were 28 and eight, respectively (Exh. MGED-1, § 11). Middletown's sendout to the municipal heating and non-heating classes was 37.4 and 9.2 MMCF, representing 9.1 and 2.2 percent, respectively, of the Company's sendout for the same period (i.d.). The number of municipal customers is projected to be constant through the five years of the planning horizon (i.d.). The Company stated that the Town of Middletown has no plans to add any new buildings or to change its use of gas and that the number of municipal heating customers has remained at 28 for the last three years (Tr. at 18-19). Therefore, sendout to municipal heating and non-heating customers is projected to decline by one percent per year over the five-year planning horizon due solely to the one percent annual conservation adjustment (Exh. MGED-1, § 11).

b. Analysis

The number of municipal customers in the Town of Middletown has remained constant over the past few years, and municipal sales represent less than twelve percent of

Middleborough's sendout. Because the Company has evaluated the Town of Middleborough's municipal plans to develop its forecast, the Department finds that Middleborough's municipal forecasting methodologies are reviewable, appropriate, and reliable.

5. Industrial Forecast

a. Description

For the 1992-1993 split year, Middleborough's average number of industrial heating customers was 12 (Exh. MGED-1, § 11). All industrial customers are heating class customers (i.d.). Middleborough's sendout to the industrial heating class was 37.1 MMCF, representing nine percent of the Company's sendout for the same period (i.d.).

Based on its knowledge of its service area, Middleborough forecasted the number of industrial heating customers for the next five years. Specifically, Middleborough knew of one vacant industrial building which is expected to be reoccupied during the forecast period (Ir. at 19). Further, Middleborough was aware of one industrial entity which is currently breaking ground for a new facility in the Company's territory (i.d. at 19-20). Therefore, Middleborough's forecast adds one industrial heating customer in 1994-1995 and another in 1996-1997 (Exh. MGED-1, § 11).

Middleborough held discussions with its largest customer, Ocean Spray, to determine that customer's future energy use (Ir. at 20). Middleborough stated that Ocean Spray has no plans to change its gas consumption over the next five years, although Ocean Spray has been considering the construction of a gas-fired cogeneration plant for the past five years

(i.d. at 21). Middletown stated that it did not believe that Ocean Spray would build a cogeneration plant during the forecast period, because there would not be a market for the electricity in the area during that time (i.d. at 22).

Based on Middletown's forecast of two additional industrial customers in the forecast period and the one percent per year conservation adjustment, the Company indicated that industrial heating sendout would increase an average of 2.9 percent annually (Exh. MGED-1, § 11).

b. Analysis

The Department recognizes that projecting industrial class use can be difficult for a gas company with few industrial customers. Middletown has based its forecast of industrial use on its unique knowledge of its service territory, and it has made a concerted effort to understand its individual customers and their plans. Therefore, the Department finds that the Company's industrial forecast is reasonable, appropriate, and reliable.

6. Normal and Design Year Sendout Forecast

a. Description

Middletown's forecast of total Company firm sendout is based on the forecast methodology described above. To derive seasonal normal year and design year sendout, Middletown summed the residential, commercial, municipal and industrial forecasted sendout by customer class (Exh. MGED-1, § 11). Middletown's normal year sendout for the heating season increases from 296.03 BBTu for the 1993-1994 split year to 326.32 BBTu for the 1997-1998 split year for a growth rate of 2.5 percent per year (Exh. MGED-1,

Table G-5). Middletown's normal year sendout for the nonheating season increases from 127.38 BBtu for the 1993-1994 split year to 140.78 BBtu for the 1997-1998 split year for a growth rate of 2.5 percent per year (i.d.) Middletown's sendout for the design heating season increases from 315.56 BBtu for the 1993-1994 split year to 348.10 BBtu for the 1997-1998 split year for a growth rate of 2.5 percent per year (i.d.)

b. Analysis

In previous sections of this order, the Department has found that (1) the Company's normal year standard is reviewable, appropriate, and reliable; (2) the Company's design year standard is reviewable, minimally appropriate, and minimally reliable; (3) the Company's residential and commercial forecasts are reviewable, minimally appropriate, and minimally reliable; and (4) the Company's municipal and industrial forecasts are reviewable, appropriate, and reliable. Therefore, based on the record, the Department finds that Middletown's normal year sendout forecast is reviewable, but only minimally appropriate and minimally reliable, and that its design year forecast is reviewable, but only minimally appropriate and minimally reliable.

In order for the Department to approve Middletown's normal and design year sendout forecasts in its next filing, the Company must re-examine its sendout methodologies in light of the probability of occurrence of its design year and must forecast the number of residential and commercial non-heating customers.

7. Design Day Sendout Forecast

a. Description

Middletown's design day sendout forecast is based on the design degree day standard as described in Section II.C.4.a, above (Tr. at 11). Middletown's design day of 77 degree days is based on the coldest day recorded in its weather database (Exh. MGED-1, at 1). The design day has occurred twice in the last 25 years, but the Company did not perform any studies to determine the probability of occurrence of such a design day (Tr. at 11). Middletown's design day sendout increases from 3.94 Btu for the 1993-1994 split year to 4.24 Btu for the 1997-1998 split year for a 1.9 percent per year growth rate (Exh. MGED-1, Table G-5).

b. Analysis

Although Middletown has based its design degree day forecast on the coldest day recorded in its weather database, it has not performed any studies to determine the probability of occurrence of such a design day. Further, the Department found in Section II.C.4.b., above, that the Company's design day standard is reviewable, but only minimally appropriate and minimally reliable. Thus, the Department finds Middletown's design day sendout forecast to be reviewable, but only minimally appropriate and minimally reliable. Consequently, in order for the Department to approve Middletown's design day sendout forecast in its next filing, the Company must re-examine its design day sendout methodology and consider the probability of occurrence of its design day.

E. Conclusions on the Sendout Forecast

In Section II.C.5 of this Order, the Department found that the Company's planning standards are reviewable, but only minimally appropriate and minimally reliable. In Section II.D.6.b. of this Order, the Department found that the Company's normal year and design year sendout forecasts are reviewable, but only minimally appropriate and minimally reliable. In Section II.D.7.b of this Order, the Department found that the Company's design day sendout forecast is reviewable, but only minimally appropriate and minimally reliable.

In Section II.D.1.b above, the Department found that Middletown's use of historical disaggregated sendout data to develop its sendout forecast satisfied condition one of the 1983 Middletown Decision. The Department also found that Middletown's use of a conservation factor in adjusting sendout downward to account for the effects of gas company DSM programs and for naturally occurring conservation satisfied condition three of the 1983 Middletown Decision.

As discussed above in Sections II.D.2.b. and II.D.3.b., in order for the Department to approve Middletown's residential and commercial forecasts in its next forecast and supply plan, the Company must improve its forecast of the number of residential and commercial non-heating customers. This will provide for more accurate input data in Middletown's forecasting model, and will enable the Department to make a more accurate assessment of the accuracy of that model.

By its own account, Middletown has not considered the actual probability of occurrence for its design year and design day standards in preparing its forecasts. In order

for the Department to approve Mi ddl eborough's desi gn year and desi gn day standards i n i ts next forecast and supply pl an, the Company must re-exami ne i ts sendout methodology and eval uate the probabi l i ty of occurrence of i ts desi gn year and desi gn day.

As di scussed i n Secti on I I .D.1.b., the Department i s concerned that Mi ddl eborough's methodology and the use of the AGA model may not provi de suffi ci ently accurate and rel i able forecasts i n the future. Therefore, i n order for the Department to approve Mi ddl eborough's next forecast and supply pl an, Mi ddl eborough must eval uate the appropri ateness of the conti nued use of i ts current forecasti ng methodology and assess whether an al ternati ve methodology i s more appropri ate. I f Mi ddl eborough concl udes that use of trendi ng and i ts current forecasti ng methodology i s appropri ate for a company of i ts si ze, Mi ddl eborough shoul d justi fy i ts conti nued use. Accordi ngly, the Department condi ti onal ly APPROVES the sendout forecast of Mi ddl eborough for the spl i t years 1993-1994 through 1997-1998.

I I I . ANALYSIS OF THE SUPPLY PLAN

A. Standard of Revi ew

The Department i s requi red to ensure "a necessary energy supply for the Commonweal th wi th a mi ni mum i mpact on the envi ronment at the lowest possi ble cost.' G.L. c. 164, § 69H. I n ful fi l l i ng thi s mandate, the Department revi ews a gas company's supply pl anni ng process and the two maj or aspects of every uti l i ty's supply pl an – adequacy

and cost.⁵ D.P.U. 93-13, at 49-50; 1992 Boston Gas Decision at 201; 1987 Berkshire Decision at 71.

The Department reviews a gas company's five-year supply plan to determine whether that plan is adequate to meet projected normal year, design year, design day, and cold snap⁶ firm sendout requirements (see Section III.D., below).⁷ In order to establish adequacy, a gas company must demonstrate that it has an identified set of resources which meet its projected sendout under a reasonable range of contingencies. If a company cannot establish that it has an identified set of resources which meet sendout requirements under a reasonable range of contingencies, the company must then demonstrate that it has an action plan to meet projected sendout in the event that the identified resources will not be available when expected. D.P.U. 93-13, at 50; 1992 Boston Gas Decision at 202; 1987 Berkshire Decision at 71.

In its review of a gas company's supply plan, the Department reviews a company's overall supply planning process (see Section III.E., below). An appropriate supply planning process is essential to the development of an adequate, low cost, and low environmental

⁵ G.L. c. 164, § 69H also directs the Department to balance cost considerations with environmental impacts in ensuring that the Commonwealth has a necessary supply of energy. See Section III.E.1., below.

⁶ The EFSC has classified Middleborough as a "small size" gas company. 1986 Gas Generic Order at 104-105. As such, the EFSC indicated that an analysis of cold-snap preparedness is not necessary. Id.

⁷ The Department's review of reliability, another necessary element of a gas company's supply plan, is included within the Department's consideration of adequacy. See: D.P.U. 93-13, at 50; 1992 Boston Gas Decision at 201; 1987 Boston Gas Decision at 214.

impact resource plan. Pursuant to this standard, a gas company must establish that its supply planning process enables it to: (1) identify and evaluate a full range of supply options, and (2) compare all options -- including C&LM -- on an equal basis. D.P.U. 93-13, at 50; 1992 Boston Gas Decision at 202; 1986 Fall River Decision at 115.⁸

Finally, the Department reviews whether a gas company's five-year supply plan minimizes cost (see Section III.F., below). A least-cost supply plan is one that minimizes costs subject to trade-offs with adequacy and environmental impact. D.P.U. 93-13, at 51; 1992 Boston Gas Decision at 203; Massachusetts Electric Company/New England Power Company, 18 DOMSC at 295, 337 ("1989 MECo/NEPCo Decision"). Here, a gas company must establish that application of its supply planning process has resulted in the addition of resource options that contribute to a least-cost plan.

B. Previous Supply Plan

In the 1983 Middleborough Decision, the Siting Council found that Middleborough had available to it several diverse sources of gas supply, and that it had the necessary resources to meet its design year (and thus its normal year) requirements. 1983 Middleborough Decision at 124. The Siting Council also found that Middleborough had the necessary peak day resources to meet its peak day sendout requirements. Id. In its

⁸ In 1986, G.L. c. 164, § 69J was amended to require a utility company to demonstrate that its long-range forecast "include[s] an adequate consideration of conservation and load management." Initially, the Siting Council reviewed gas C&LM efforts in terms of cost minimization issues. In the 1988 Commonwealth Gas Decision, 17 DOMSC 71, 122-126, the Siting Council expanded its review to require a gas company to demonstrate that it has reasonably considered C&LM programs as resource options to help ensure that it has adequate supplies to meet projected sendout requirements.

1982 decision, the Sitting Council asked Middletown to present "an analysis of the Company's plans for meeting the demands of its customers in the event each of its major gas supplies is disrupted". Middletown Gas and Electric Department, 8 DOMSC 41, 47. In the 1983 Middletown Decision, the Sitting Council found that Middletown had satisfied this condition. 1983 Middletown Decision at 124.

The Sitting Council found that Middletown had assembled a forecast supplement which met the EFSC's "appropriate, reviewable and reliable" standard and unanimously approved the 1983 Long-Range Gas Forecast Supplement of Middletown. Id. at 125.

C. Base Case Supply Plan

In this section, the Department reviews the Company's supply plan and identifies elements which represent potential contingencies affecting the adequacy of supply or which potentially impact the cost of the supply plan. The Department then reviews the adequacy of the Company's supply plan in Section III.D., below; the Company's supply planning process in Section III.E., below; and the cost of the Company's supply plan in Section III.F., below.

1. Supply-Side Resources

Middletown purchases pipeline gas on the Algonquin system under a management contract with CNG Gas Services Corporation ("CNG") (Tr. at 58-61; Exh. MGED-1, at Table G-24). The contract was negotiated through an RFP process which involved a consortium of several LDCs (Exh. MGED-9). Responses were received from five gas supply companies solicited through the RFP process (id.). The Company's selection criteria are described in Section III.E.2.a, below (Exh. MGED-12).

Middleborough has a take-and-pay contract for delivery of vapor or liquefied natural gas ("LNG") with Bay State Gas Company ("Bay State") (Tr. at 31; Exh. MGED-1, at Table G-24). Middleborough negotiated a reduction in the Bay State contract in 1990 to reduce the take requirement from 80,000 MMBtu to 40,000 MMBtu over the winter period (Tr. at 34-35). The contract was renewed for ten years (i.d. at 35).

Middleborough purchases vapor and LNG from Distri Gas of Massachusetts Corporation ("DOMAC") via a negotiated contract (Exh. MGED-1, at Table G-24). Middleborough reduced its contracted amount with Bay State by one half and signed a contract with DOMAC for 500 MMBtu of supply per day as a result of an analysis showing DOMAC LNG to be more cost-effective than gas or LNG from Bay State (Tr. at 34-38). The Company maintained its contract with Bay State, though at a reduced quantity, for operational reasons (i.d. at 36-37). The Bay State interconnection provides much needed gas pressure at critical times to ensure that gas will flow in certain neighborhoods on Middleborough's system (i.d. at 36).

To meet its slowly growing hourly peak sendout, Middleborough made a comparison between increasing pipeline gas, which would have required rebuilding a metering station and laying extensive new pipe, and increasing the vaporization capacity of its LNG facility (i.d. at 27-29). Middleborough concluded that the expansion of the vaporization capacity of the LNG facility would be more cost-effective in meeting its peak requirements, because it would not require rebuilding the metering station and laying new pipe (i.d.). Middleborough budgeted for the added vaporization capacity and planned to add it to the LNG plant in the

summer of 1995 (i d. at 47).

2. Demand-Side Management

In the 1983 Middleborough Decision, the Siting Council directed the Company to continue to develop its conservation programs and seek ways in which it might increase participation among its residential customers in Mass Save or provide its customers with an alternative. Middleborough now has a formal energy conservation service implementation plan and is more aggressively marketing its Energy Miser and energy auditing programs (Exh. MGED-8; Tr. at 85).

The Company's witness, Ms. Cataldo, stated that she was hired specifically to improve Middleborough's marketing of its energy conservation service program (Tr. at 84-85). Ms. Cataldo testified that the program consists primarily of home energy audits performed by consultants who install up to \$30 worth of materials and show the customer, by way of example, how to conserve energy (i d. at 84). She stated that as a result of aggressive marketing practices, customer participation increased from an average of 25 homes audited per year to 142 in 1994 (i d. at 85). The Company's target for 1995 is 150 (i d.).

Middleborough's energy conservation services program is available to all the Company's gas and electric customers (i d. at 83). Ms. Cataldo stated that the program is regulated by the Massachusetts Division of Energy Resources ("DOER"), which stipulates the measures that must be included in a residential DSM program (i d. at 87). The regulations also stipulate that all utility companies must spend at least one-quarter of one

percent of their revenues on this program every year (i.d. at 88).

The Company's energy conservation service efforts are administered by Conservation Services Group, Incorporated ("CSG") (Exh. MGED-8, at 2). Previously, the contractor had been DMC Energy, Incorporated (i.d.). The Company stated that the switch to CSG had enabled it to raise its goals by eight percent while simultaneously reducing its DSM budget by \$7,000 (i.d. at 5). The Company is involved in a DSM pilot program with other municipal utilities (Tr. at 90). As a member of that group, Middletown is assessing the feasibility of providing DSM measures to its commercial customers (i.d.).

As a result of Middletown's extensive efforts to market its conservation services to its residential customers and its investment into the viability of a conservation program for its commercial customers, the Department finds that Middletown has complied with condition two of the 1983 Middletown Decision.

3. Capacity Management Contract

Middletown stated that as a result of FERC Order 636 the Company was faced with managing many small contracts (Tr. at 39). For example, Middletown's single contract with Algonquin was replaced by 45 new contracts for capacity, storage, and supply (i.d.). Middletown lacked the resources to manage all of these separate contracts effectively (i.d. at 61). To address this problem, Middletown contracted with CNG Services to manage its upstream storage and pipeline capacity (Exh. MGED-1, at 2; Tr. at 59). CNG balances Middletown's pipeline gas load each day in order to avoid incurring imbalance penalties (Tr. at 59). CNG also manages injections to and withdrawals

from Middleborough's storage capacity (i.d. at 60). According to Middleborough, the management contract with CNG has enabled the Company to reconstruct the type of bundled service it received from Algonquin before FERC Order 636 (i.d. at 67).

Middleborough chose CNG as the result of a bidding process (Exh. MGED-9). The Company stated that the other four bidders were poorly qualified to perform the services required (Tr. at 68). The Company's witness, Mr. Collins, stated that he believes the Company got the best price it could under the circumstances, but that it might have been at a disadvantage because it is a small player and received only one qualified bid (i.d. at 67-68). The Company stated that in the future it may form associations with other gas companies to manage their capacity as a group (i.d. at 68).

D. Adequacy of the Supply Plan

In reviewing the adequacy of a gas company's five-year supply plan, the Department first examines whether the company's base-case resource plan is adequate to meet its projected normal year, design year, design day, and cold-snap firm sendout requirements and, if so, whether the company's plan is adequate to meet its sendout requirements if certain supplies become unavailable. D.P.U. 93-13, at 62; 1992 Boston Gas Decision at 212-213; 1987 Berkshire Decision at 76. If the supply plan is not adequate under the base-case resource plan or not adequate under the contingency of existing or new supplies becoming unavailable, then the company must establish that it has an action plan which will ensure that supplies will be obtained to meet its projected firm sendout requirements. I.d.

1. Normal and Design Year Adequacy

a. Description

As stated in Sections II.C.2 and II.C.3 above, the Department found Middleborough's normal year standard reviewable, appropriate, and reliable, and its design year standard reviewable, but only minimally appropriate and minimally reliable. Middleborough presented supply plans for meeting its forecasted normal year and design year sendout requirements throughout the forecast period (Exh. MGED-1, Table G-22S).

Middleborough plans to meet its normal and design heating season needs through a combination of firm pipeline supplies from the Algonquin Gas Transmission Company ("Algonquin") via CNG Gas Services, and vapor and LNG from Bay State and DOMAC (Exh. MGED-1, Tables G-22S and G-24). Middleborough's forecasted normal firm sendout requirements rise from 296.03 BBtu in the 1993-1994 heating season to 326.32 BBtu in the 1997-1998 heating season (Exh. MGED-1, Table G-22S). Middleborough's forecasted design firm sendout requirements rise from 315.56 BBtu in the 1993-1994 heating season to 348.10 BBtu in the 1997-1998 heating season (i.d.).

Middleborough stated that, in the event of interruption of pipeline supply deliveries, CNG will provide back-up gas equal to 70 percent of reserved capacity to the extent that the temperature in Pittsburgh, Pennsylvania exceeds or equals zero degrees Fahrenheit⁹ (Exh. MGED-1, at 2). If the temperature in Pittsburgh is less than zero degrees Fahrenheit, CNG will tender such backup quantity when it can be secured on the spot market (i.d.).

⁹ CNG serves its own LDCs in the Pittsburgh area (Tr. at 79).

CNG would not want to be in the position of curtailing its own LDC customers during cold weather while providing full requirements to Middleborough (Tr. at 79).

Middleborough's witness, Mr. Collins, stated that if CNG gas were not available, the Company would divert to the LNG facility or the Bay State vapor delivery as additional backup (i.d. at 73). For a summer curtailment Middleborough would use LNG as the backup, because it would be cheaper than other supplies and there would be less risk of consuming LNG to a level of depletion (i.d.). In a wintertime curtailment, Middleborough would first use Bay State to the fullest extent possible (i.d.). Second, Middleborough would try to reduce any customers on the system that had dual-fuel capability (i.d.). Third, Middleborough would use LNG from storage (i.d.). Mr. Collins stated that this type of curtailment would normally happen due to an accident caused by digging into the pipeline, which would result in a short term curtailment (i.d. at 75). In that scenario, Algonquin would reduce pipeline pressure to make repairs, and Algonquin would deliver part of Middleborough's gas but would not be able to deliver all of it due to reduced pressure (i.d.). Mr. Collins indicated that the Company expects the duration of that loss of supply to be less than a day (i.d.).

b. Analysis

Based on Middleborough's sendout and supply tables, the Company has demonstrated that it has adequate supplies to meet forecasted sendout requirements under normal and design conditions throughout the forecast period. Middleborough has also demonstrated that it has adequately planned for a supply interruption. Accordingly, the Department finds that

Middleborough has established that its normal year and design year supply plans are adequate to meet the Company's forecasted sendout requirements throughout the forecast period.

2. Design Day Adequacy

a. Description

Middleborough must have an adequate supply capability to meet its firm customers' design day requirements. While the total supply capability necessary for meeting design year requirements is normally a function of the aggregate volumes of gas available over some contract period, design day capability is determined by the maximum daily deliveries of pipeline gas, the maximum rate at which supplemental fuels can be dispatched, and the quantity of C&LM available on a design day.

As stated in Section III.C.4.b. above, the Department found Middleborough's design day standard reviewable, but only minimally appropriate and minimally reliable. Middleborough plans to meet its design day needs through a combination of firm pipeline supplies from Algonquin via CNG Gas Services, vapor from Bay State and DOMAC, and LNG from storage and a Hortonsphere¹⁰ (Exh. MGED-1, Table G-23). Middleborough's forecasted peak day sendout requirements rise from 3.942 BBTu in the 1993-1994 heating season to 4.244 BBTu in the 1997-1998 heating season (i.d.).

Table G-23 indicates a large excess of supply on the Company's forecasted design day (i.d.). However, Middleborough stated that while it has a design day surplus margin, its peak

¹⁰ The Hortonsphere is a gas storage sphere with a capacity of about 180 MMBtu which can deliver gas at a rate of about 10 to 15 MMBtu per hour (Tr. at 53).

hour capacity is its greater concern (Tr. at 50-52). In order to increase its hourly capacity and meet its peak hour needs, Middleborough planned the addition of a vaporizer to its LNG unit, as described in Section III.C.1. This increases Middleborough's hourly capacity by about 60 MMBtu (i.d.). The additional vaporization enables Middleborough to have adequate surplus hourly margins throughout the five-year forecasting period (Exh. MGED-1, Table G-23).

b. Analysis

Based on Middleborough's sendout and supply tables containing peak day data, the Company has demonstrated that it has adequate supplies and facilities to meet forecasted sendout requirements under design day conditions throughout the forecast period. Middleborough's apparent oversupply as reported in Table G-23 is the result of the Company's installation of additional vaporization capability at its LNG facility. As discussed in Section III.C.1., the additional vaporizer allows a greater deliverability of gas from the LNG facility, but does not increase the storage capacity of the LNG facility.

Accordingly, the Department finds that Middleborough has established that its design day supply plan is adequate to meet the Company's forecasted sendout requirements throughout the forecast period.

3. Cold-Snap Adequacy

The Sitting Council has defined a cold-snap as a prolonged series of days at or near design conditions. D.P.U. 93-13, at 66; 1992 Boston Gas Decision at 217; 1988 Commonwealth Gas Decision, 17 DOMSC at 137. A gas company must demonstrate

that the aggregate resources available to it are adequate to meet this near maximum level of sendout over a sustained period of time, and that it has and can sustain the ability to deliver such resources to its customers. D.P.U. 93-13, at 66; 1992 Boston Gas Decision at 217; 1988 Commonwealth Gas Decision, 17 DOMSC at 137.

Middleborough is classified as a small gas company. 1986 Gas Generic Order at 104. As such it is not required to submit an analysis of its cold-snap preparedness. Id. at 105. However, prudent forecasting and supply planning, even for small companies, would dictate that these companies consider the impact of a cold-snap on their supplies. While such an analysis is not a strict requirement, the Department believes it is advisable that Middleborough consider an analysis of its cold snap preparedness in its future planning efforts.

4. Conclusions on the Adequacy of the Supply Plan

The Department has found that Middleborough has established that: (1) its base case, normal year and design year supply plans are adequate to meet the Company's forecasted firm sendout requirements during the forecast period, and (2) its base case supply plan is adequate to meet the Company's forecasted firm design day requirements during the forecast period. Further, the Department has found that the Company has established that it has adequate resources and that it has adequately planned for a supply interruption.

Accordingly, the Department finds that Middleborough has established that it has adequate resources to meet its firm sendout requirements throughout the forecast period.

E. Supply Planning Process

1. Standard of Review

The Department has determined that a supply planning process is critical in enabling a utility company to formulate a resource plan that achieves an adequate, least-cost and low environmental impact supply for its customers. D.P.U. 93-13, at 70; 1992 Boston Gas Decision at 223; 1990 Boston Gas Decision at 388. The Department has noted that an appropriate supply planning process provides a gas company with an organized method of analyzing options, making decisions, and reevaluating decisions in light of changed circumstances. Id. For the Department to determine that a gas company's supply planning process is appropriate, the process must be fully documented. D.P.U. 93-13, at 70; 1992 Boston Gas Decision at 223; 1987 Berkshire Gas Decision at 84.

The Department's review of a gas company's process for identifying and evaluating resources focuses on whether the company: (1) has a process for compiling a comprehensive array of resource options -- including pipeline supplies, supplemental supplies, DSM, and other resources; (2) has established appropriate criteria for screening and comparing resources within a particular supply category; (3) has a mechanism in place for comparing all resources, including DSM, on an equal basis, i.e., across resource categories, and (4) the process as a whole enables the company to achieve an adequate, least-cost, and low environmental impact supply plan. D.P.U. 93-13, at 70; 1992 Boston Gas Decision at 224; 1990 Boston Gas Decision at 54-55.

2. Identification and Evaluation of Resource Options

a. Supply-Side Resources

Middleborough stated that it has identified sources of gas supply to meet its forecasted sendout. These include pipeline gas via Algonquin; vapor from Bay State via the Taunton hookup;¹¹ vapor from DOMAC via the Algonquin pipeline; and LNG transported by truck from Bay State or DOMAC (Tr. at 69-73). Middleborough has two peaking facilities, an LNG storage tank and a Hortonsphere (i.d. at 53). Mr. Collins stated that the Company's pipeline options were constrained (i.d. at 28). Mr. Collins also indicated that Middleborough would not be able to increase its take of pipeline gas without laying extensive new pipe into the downtown area and rebuilding Algonquin's meter station, both of which would be very expensive (i.d.). As described in Section III.C.1 above, Middleborough's analysis indicated that increasing the vaporization at the LNG facility was the Company's most cost-effective resource option (i.d. at 29).

Having determined the appropriate mix of various resources, Middleborough used a competitive bidding process to select a supplier of pipeline gas (Exh. MGED-9). In 1993, Middleborough joined a consortium of gas companies that issued an RFP for new gas supplies (i.d.). The other companies were Providence Gas Company, Fall River Gas Company, Valley Gas Company, Norwich Gas Company, and Colonial Gas Company (i.d.). Middleborough's selection of gas supplies is determined by evaluating a combination of factors such as cost, reliability, supply reserves, fuel diversity, financial soundness of

¹¹ Middleborough's system is connected to Bay State's at Taunton.

supplier, flexibility of supply in case of interruption, and system balance (Exh. MGED-11).

The Department finds that it is reasonable for Middletown to contract for the management of the capacity it received as a result of FERC Order 636. While larger LDCs have greater resources to cope with changes in the structure of the industry, small companies like Middletown are more limited. The Department has endorsed LDC acquisition processes that have involved receiving competitive bids from potential suppliers. Bay State Gas Company, D.P.U. 95-87, at 10, 11; Fall River Gas Company, D.P.U. 94-38, at 10.

Therefore, the Department finds that the RFP process Middletown used to identify a supplier of these services is appropriate.

Middletown demonstrated that it has developed an acceptable process which allows it to identify supply and capacity alternatives. Middletown has utilized price and non-price criteria to determine which options to pursue. Accordingly, the Department finds that Middletown has formulated an appropriate process for identifying and evaluating new supply-side resources in order to select the appropriate options.

Therefore, the Department finds that Middletown has developed a process for compiling a comprehensive array of supply options and has developed appropriate criteria for screening and comparing supply resources.

b. Demand-Side Management

In Middletown's current forecast and supply plan, DSM spending is targeted to be one-quarter of one percent of Middletown's annual revenues, as required by DOER regulations (DPU-RR-4). According to the Company's witness, Ms. Cataldo, the measures

Middleborough offers as part of its DSM program are those required by DOER regulations (Tr. at 87). Ms. Cataldo stated that the measures are implemented by auditors under contract who perform on-site analysis to determine which measures are cost-effective in each situation (i.d. at 87-88). Ms. Cataldo indicated that Middleborough did not compare supply and demand resources on an equal basis in preparing its supply plan, although the Company is beginning to attempt this type of analysis (i.d. at 92). Further, Middleborough currently does not offer DSM services to commercial and industrial customers (i.d. at 91). Ms. Cataldo stated that Middleborough is currently working with a DOER task force to investigate the feasibility of providing added DSM services to commercial customers (i.d. at 90).

The Department has long recognized that regulatory standards may be interpreted differently for small LDCs than for large companies. 1986 Gas Generic Order at 103-105; Commonwealth of Massachusetts, Energy Facilities Siting Council, Administrative Bulletin 86-1, at 16. This difference has been justified by the Department's recognition that the "smallest companies have few resources, and do not appear to need sophisticated methods to be able to ensure that their customers' requirements will be met." 1986 Gas Generic Order, at 103. Therefore, the Department finds that it is reasonable that a small municipal LDC with limited resources, such as Middleborough, would rely on the guidance of the DOER for development of its energy efficiency programs.

In Section III.C.2. the Department found that Middleborough complied with condition two of the 1983 Middleborough Decision through its effort to market its conservation

services to its residential customers and its investigation of a conservation program for its commercial customers. However, the Department finds that Middleborough does not have a process for compiling a comprehensive array of DSM resources for all its customers and does not have established criteria to compare various DSM resources. Therefore, in order for the Department to approve Middleborough's next forecast and supply plan, Middleborough must develop a process for identifying and evaluating DSM resource options for all its customer classes.

3. Consideration of all Resources on an Equal Basis

The Department has held that, in order for a gas company's planning process to minimize cost, that process must adequately consider alternative resource additions, including DSM options, on an equal basis. D.P.U. 93-13, at 83; 1992 Boston Gas Decision at 233; 1986 Fall River Decision at 115.

Here the Department notes that, at present, Middleborough relies on CNG for its gas supply and delivery needs (Exh. MGED-20). Mr. Collins conducted an analysis to make comparisons between various supply options (Tr. at 30-33). Using assumptions about usage and future prices of resources, Mr. Collins created an expected gas price (i.d.). Then, using this price figure and the other decision criteria discussed in Section III.E.2 above, Middleborough selected the optimal resource option (i.d. at 30-37). Mr. Collins stated that price was not his only operational concern (i.d. at 35-36). For example, according to Mr. Collins, Middleborough maintains a contract with Bay State for vapor and LNG, even though it is more expensive than pipeline gas, because Bay State's Taunton connection

provides Middletown with additional gas pressure at times when Middletown's system pressure is low and deliverability is of concern (id. at 34-38).

While the Company stated that it does not have a method to evaluate DSM options as a resource on an equal basis with supply-side resources, in its sendout forecast Middletown assumes a one percent reduction in sendout due to conservation (id. at 92; Exh. MGED-1, at 1). However, the Company has not performed any analysis to determine if the one percent adjustment for conservation is accurate (Id. at 12).

Therefore, the Department finds that while Middletown has incorporated both supply and demand options into its resource mix, it has not compared all resources, including DSM, on an equal basis. In order for the Department to evaluate and approve Middletown's next forecast and supply plan, Middletown must provide additional detail and analysis of its evaluation of all resources on an equal basis.

4. Conclusions on the Supply Planning Process

The Department has found that: (1) Middletown's process for identifying and evaluating supply-side resources is appropriate; (2) Middletown's process for identifying and evaluating conservation resources is only minimally appropriate; and (3) Middletown did not establish that its supply planning process is designed to ensure the treatment of all supply options on an equal basis. In Section III.D.4., the Department found that Middletown established that it has adequate resources to meet its firm sendout requirements throughout the forecast period. However, Middletown has only minimally demonstrated that its process as a whole enables the Company to achieve an adequate, least-

cost, and low environmental impact supply plan. Therefore, in order for the Department to approve Middleborough's next forecast and supply plan, the Company must provide additional detail and analysis of its evaluation of all resources on an equal basis.

F. Least Cost Supply

1. Standard of Review

As set forth in Section III.A, above, the Department reviews a gas company's five-year supply plan to determine whether it minimizes cost, subject to trade-offs with adequacy and environmental impact. D.P.U. 93-13, at 88; 1992 Boston Gas Decision at 236; 1987 Boston Gas Decision at 214. A gas company must establish that the application of its supply planning process, including adequate consideration of DSM and consideration of all resource options on an equal basis, has resulted in the addition of resource options that contribute to a least-cost supply plan. As part of this review, the Department requires gas companies to show, at a minimum, that they have completed comprehensive cost studies comparing the costs of a reasonable range of practical supply alternatives prior to selection of major new resources for their supply plans. D.P.U. 93-13, at 89; 1992 Boston Gas Decision at 236; 1986 Gas Generic Order at 100-102.

2. Middleborough's Least Cost Analysis

As described in Section III.E.3. above, the Company stated that it selected its current supply portfolio on the basis of several criteria, including an analysis using assumptions about costs of various supply alternatives. As described in Section III.E.3., the Company does not have a method to evaluate DSM as a resource on an equal basis with supply-side

resources.

The Department recognizes that Middelborough has performed least-cost analyses on a case-by-case basis as it has been faced with individual supply decisions. The Company has dealt with the Order 636 unbundling in a pro-active manner and is using a competitive bidding process to bring costs down for its customers, as described in Sections III.C.1. and III.C.3., above. While the Company did not compare supply and demand resources on an equal basis during its DSM acquisition process, the Department found in Section III.E.2.b., above, that Middelborough has minimally developed a process for compiling a comprehensive array of DSM resources for all its customers and that it has minimally established criteria to compare various DSM resources.

G. Conclusions on the Supply Plan

The Department has found that Middelborough has established that its normal year and design year supply plans are adequate to meet the Company's forecasted sendout requirements throughout the forecast period. The Department has found that the Company has established that its design day supply plan is adequate to meet the Company's forecasted sendout requirements throughout the forecast period.

The Department also has found that: (1) Middelborough's process for identifying and evaluating supply side resources is appropriate; (2) Middelborough's process for identifying and evaluating conservation resources is minimally appropriate; and (3) Middelborough only minimally established that its supply planning process is designed to ensure the treatment of all supply options on an equal basis. Further, consistent with the Decision and Order from a

previous decision, 1983 Mi ddleborough Deci si on, the Department fi nds that Mi ddleborough has met the requi rements thereof as di scussed i n Secti ons I I .D.1.b and I I I .C.2.

Accordi ngly, the Department condi ti onally APPROVES the supply plan of Mi ddleborough Gas and EI ectri c Department, for the spl i t years 1993-94 through 1997-98.

I V. CONCLUSI ON

The Department hereby condi ti onally APPROVES the 1993-1998 sendout forecast and supply plan of Mi ddleborough Gas and EI ectri c Department.

I n so deci di ng, the Department has detai led speci fi c i nformati on that Mi ddleborough must provi de i n i ts next fi l i ng i n order for the Department to approve the Company's next forecast and supply plan. Thi s speci fi c i nformati on i s necessary for the Department to ful fi l l i ts statutory mandate. Therefore, i n order for the Department to approve Mi ddleborough's next fi l i ng, the Company must:

- (1) devel op desi gn year standards based on an analysi s of the probabi l i ty of occurrence of vari ous possi ble desi gn standards and the costs of mai ntai ni ng suppl i es to meet the weather represented by these standards, and must base i ts desi gn year standard on data from i ts coldest actual spl i t year;
- (2) devel op desi gn day standards based on the probabi l i ty of occurrence of vari ous possi ble desi gn standards and of the costs of mai ntai ni ng suppl i es to meet the weather represented by these standards;
- (3) eval uate the appropri ateness of conti nued use of i ts current forecasti ng methodology and assess whether an alternati ve methodology i s more appropri ate;

- (4) make a comparison of normalized use per customer over the years for which the data are available and comment on the appropriateness of the one percent conservation adjustment in its next forecast and supply plan;
- (5) forecast the number of residential and commercial nonheating customers;
- (6) have a process for identifying and evaluating DSM resource options for all its customer classes; and
- (7) provide additional detail and analysis of its evaluation of all resources on an equal basis.

V. ORDER

Accordingly, after due notice, hearing and consideration, it is:

ORDERED: That Middleborough Gas and Electric Department's petition for approval of its long range forecast be and hereby is approved; and it is

FURTHER ORDERED: That Middleborough Gas and Electric Department follow all directives herein before filing with the Department its next forecast and supply plan; and it is

FURTHER ORDERED: That Middleborough Gas and Electric Department submit to the Department its next sendout forecast and supply plan by December 1, 1997.

By Order of the Department,

John B. Howe, Chairman

Janet Gail Besser, Commissioner

Appeal as to matters of law from any final decision, order or ruling of the Commission may be taken to the Supreme Judicial Court by an aggrieved party in interest by the filing of a written petition praying that the Order of the Commission be modified or set aside in whole or in part.

Such petition for appeal shall be filed with the Secretary of the Commission within twenty days after the date of service of the decision, order or ruling of the Commission, or within such time as the Commission may allow upon request filed prior to the expiration of twenty days after the date of service of said decision, order or ruling. Within ten days after such petition has been filed, the appealing party shall enter the appeal in the Supreme Judicial Court sitting in Suffolk County by filing a copy thereof with the Clerk of said Court. (Sec. 5, Chapter 25, G.L. Ter. Ed., as most recently amended by Chapter 485 of the Acts of 1971).